

Abbreviation as a Reflection of Terms Variability in Language for Specific Purposes: Translational Features (Terminology Case Study in German, English, Kazakh, and Russia)

Gulshat Z. Beisembayeva, Manshuk Z. Yeskindirova,
and Samal A. Tulebayeva

L. N. Gumilyov Eurasian National University, Astana, KAZAKHSTAN.

ABSTRACT

The range of modern dynamic social changes, globalization of world powers' economic cooperation, acceleration of technocratic processes have widespread impact on term systems' variability in language, in particular, on terminological variability for specific purposes. This globalized extra-linguistic factor provokes avalanche growth of terminology, acronyms and abbreviations. This became a natural condition of verbal communication not only in certain language space, but also in everyday speech. The lexiphanic technical and specific terms leading to maximizing abbreviations can be explained primarily by the "principle of least effort" or so-called "the law for speech savings". Nearly each industry terminology is under a particular variation in a state of constant quantitative and qualitative changes. Variability, consequently, provokes corruptions in communication of the meaning of terms, namely, in their translation. The correct interpretation of terms, finding the only correct translation equivalents of a term in language for special purposes (LSP) are one of the central problems of modern terminology. The misinterpreted by a translator preformative factor. The article shows the main forms of abbreviations. The article can be a theoretical source for researches in the field of linguistics.

KEYWORDS

abbreviation; term system; clipping; text translation;
scientific-technical text; multi-terminological unit.

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Introduction

Abbreviations are quite effective means of multicomponent terminological combinations' compaction. This method of term formation was developed only in the XX century (Bergman et al., 2012; Li et al., 2015). This is due to an increase in the number of terminological combinations' elements and wide spread terms of three or more words.

CORRESPONDENCE Gulshat Z. Beisembayeva ✉ ip.beysmbaeva@list.ru

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The heavy use of various abbreviations is one of the most characteristic features in developing national terminologies and national languages in general (Lotte, 1971; Fabijanić, 2014; Sadovnikova, 2016).

The statements of Russian, Kazakh and foreign linguists show the abbreviations' prevalence in the leading modern languages (Borisov, 1969; Polivanov, 1968; Espersen, 1946).

Abbreviations are particularly common in European languages. Abbreviations have parallels in many other languages, but they are not as numerous as in modern European languages (Espersen, 1946; Lipka, 2013; Trask, 2014).

Major social changes and scientific-and-engineering progress (extra-linguistic factors) are certainly involved in conditions' creation for speech communication that encourage the emergence of abbreviations. However, the "principle of least effort" or "the law of speech savings" explain the abbreviations' emergence (Martine, 1963; Serebrennikov, 1983; Lipka, 2013). The constant contradiction between the human needs in communication and his or her desire to minimize the mental and physical efforts can be considered as the driving force of language change. As in many other cases, personal behavior is under the law of least effort, according to which the man is wasting his strength only to the extent necessary to achieve a specific purpose (Kondratyukova, 1980; Marchuk, 1992). Abbreviations are used in many industries: humanitarian, industrial, household. It is necessary to distinguish the abbreviation and the acronym – the first is the process of clipping, and the second – the result (Lehmann, 2013; Henriksson et al., 2014).

The essence of the economical use of language is to ensure high-volume information transfer per unit time. This phenomenon can be considered as a way of concentrating (condensing) the information (Tatarinov, 1998).

The possibility of clipping in language provides:

- corporality of linguistic sign. Non-corporeal sign cannot be perceived, and therefore, cannot be clipped in the form of an acronym or abbreviation.
- linearity of speech – all of the elements in the speech follow each other in sequence. The linearity of speech restricts the flow of speech by virtue of certain human characteristics: there are purely physiological limits of a human capacity to speak, listen and write. This limits the so-called "selective perception" in acquisition or transfer of information. Thus, the increased amount of semantic information in communication requires clipping its physical form.

The third factor is considered as information random distribution in communication – different elements of speech are different in meaning. Information distribution in the text is "spiked" in nature, wherein, the maxima (spikes) of information are at the beginning of the speech and its minima – at the end of speech (even inflected languages such as Russian) and at pauses (Borisov, 1969). Consequently, it is possible to compact certain information segments without any prejudice for an understanding its meaning.

Thus, authentic technical texts' analysis, namely, the study on the term system in electrical engineering enables the unification of a representative number of abbreviations. This will serve as a database for translators and all specialists working in the field of technical documentation.

Aim of the Study

Consider the types of modern abbreviations.

Research questions

- What are the reasons for abbreviations?
- In what conditions is their formation?

Method

The theoretical and methodological basis of the study is a set of complementary methods relevant to the purpose of the study, namely: methods of epistemological explication, conceptualization, structural and functional analysis.

In the course of the study, there were used dialectic approach, the principles of systematicity, the unities of historical and logical principles and the principle of rising from the abstract to the concrete. There is also a generalization of national and international experience on the research issue.

Data, Analysis and Results

According to technical texts' analysis, abbreviation is the most productive way of technical term system update in all major languages. The number of terms in the form of acronyms exponentially increases. Their special nature is of particular difficulty, as well as the specifics of their structure and their types' variety, peculiarities of abbreviation in linkage with other methods of term formation.

The choice of any variant of translation depends on several factors:

- nature of the text under translation;
- final audience, the so-called consumer;
- translator's way of thinking;
- translator's knowledge of extra-linguistic realities of the region of a consumer.

In addition, the complexity of an adequate translation of abbreviations is in the lack of an equivalent abbreviation in Russian language. The expert in technical translation must know not only theoretical foundations of translation, but also take into account cultural and historical realities of the original language, provide an accurate and correct translation of the term in general, the acronym, in particular.

Abbreviation is a unit of oral or written speech created out of individual elements of a sound or graphic form of speech (term or terminology combination) that contributes to a lexical-semantic connection of such units within it. In clipping, there can be involved certain sounds (or letters), group of sounds, so-called "morpheme elements" and single elements in different combinations (Borisov, 1969).

In considering the structure of abbreviations in language in general, and in terminology, in particular, there should be taken into account two factors:

- such elements of original units are elidable in clipping;
- it is a way to achieve integration of its elements.

Since the scientific literature has no single classification of methods for abbreviations' formation (Kondratyukova, 1980) and no single position about certain types of abbreviations (Marchuk, 1992; Tatarinov, 1998), we consider that it possible to determine:



- an initial abbreviation – is formed by means of first letters in a term system or a term;
- syncopation – is formed by means of the first syllable, more rarely second or in a term system elements or a term;
- condensation – is formed by means of a number of consonant letters of the term, that is consonantal abbreviations or telescoping;
- acronym – is formed by means of an initial abbreviation that coincidentally matched the common-literary word or by means of intentional syncopation of one or more elements of a term system for ease pronunciation;
- hybrid formation – is formed by means of clipping one element of a term system, the other one remains unchanged (Lotte, 1971).

There is a general classification of abbreviations on graphic and lexical. The first one is used only in writing with full points, hyphens, slash, cursive writing etc. Lexical abbreviation can be divided into:

- syntactic abbreviations with elidable elements;
- morphological abbreviations, which in turn are divided into:
 - syncopation;
 - initial abbreviations;
 - mixed (with elements of syncopation and initial abbreviation, partially-abbreviated, contractions, telescopic words) (Polivanov, 1968).

In the analyzed sample of abbreviations of German terms in electrical engineering are presented separately in the amount of 295; this method is also productive in narrowly-specialized terminology.

Based on the study on theoretical material, sample of sublanguage terms in electrical engineering in the amount of 2302 units, there were obtained the following results, namely, there was selected a following formal type of an abbreviation, which can be represented schematically (Figure 1).

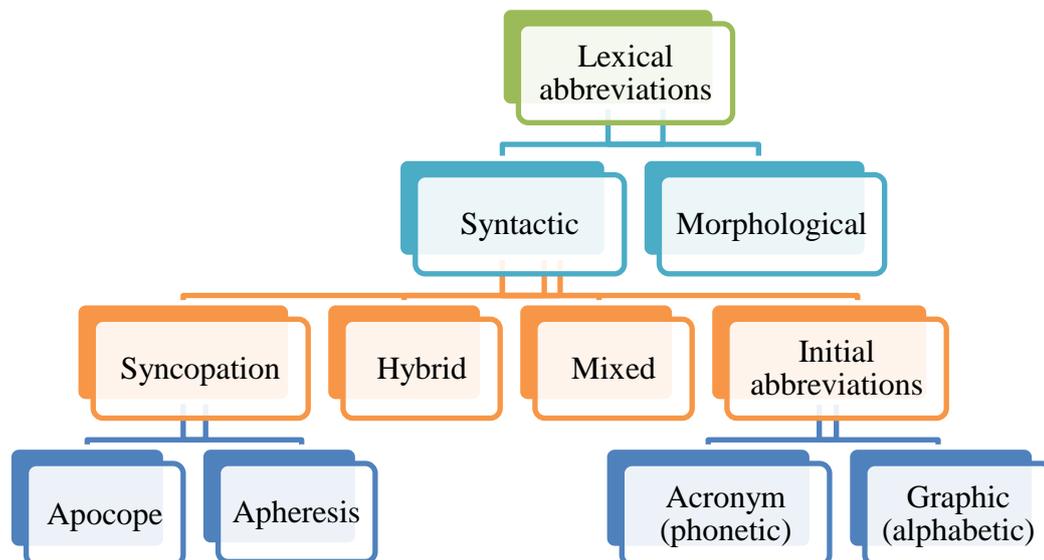


Figure 1. Lexical abbreviations' structure

An example of syntactic abbreviations and terminology of German language in electrical power engineering:

Strom_m-Elektrischer Strom _m, ElektretPol _n-DipolelektretPol _n; Solenoid_n; Magnetischer Solenoid _n, Kreism-Stromkreis _m, Solenoid _n-Solenoidspule _f.

This type of abbreviations is uncharacteristic for the sample of terms in Russian language in electrical power engineering.

In literature in electrical engineering, MTC syntactic abbreviations are not wide spread (less than 0.5% of the total sample). Parallel full term and its syntactic abbreviation, as well as any kind of abbreviation, are a source of intra-synonymous and are undesirable phenomenon, since they often make the process of translation more difficult.

More characteristic in terms of morphological terminology are abbreviations of syncopation, initial abbreviations, hybrids and mixed types.

Syncopation is divided in two subtypes:

1. apocope (clipping the end-of-word), for example:

Akk –Akkumulator _m; Ant –Antenne _f; Bi –Biot _f; Com –Compiler_m; Phas –Phasenschieber _m; qual–Qualitativ; Rö –Röhre _f; Sch –Schalter _m; Coul–Coulomb _n; Det–Detektor _m; Drehko –Drehkondensator_m; Verb–Verbindung; Vers–Versuch _m; Magn –Magnesch _m.

2. apheresis (clipping the beginning of the word), for example:

Impulssender – Sender _m; Impuls – Puls _m

An initial abbreviation is the most common type of abbreviations in electrical power engineering terminology.

According to linguistic material analysis, initial abbreviations can be divided into an initial alphabetic abbreviation and initial phonetic abbreviation. Other methods of abbreviation in the studied terminology are syncopation, hybrid, contracture (condensation) and telescoping.

1. contracture: Bd = Band _n; std = Standard _m; Cb = Coulomb _n; Hz = Hertz _n;

Lg = Länge _f; Sp = Sietepunkt _n.

2. telescoping: BesL = Besetzelampe _f; Paraldyn = parallaktisch Dynamomaschine _f; PeG = Peilgerät _n.

Hybrid type of abbreviation is much less productive, which accounts 5 TE (2% of the total sample).

Sample analysis allowed to determine two ways of hybridization:

1. contracture + simple term;

2. initial abbreviations + syncopation.

Example:

Eltweg = Elektrizitätsweg_n;

ARSpL = Automatische Regelung der Spannung des Lichtbogens;

ARSpS = Automatische Regelung der Spannung des Speiseleitung;

ARStrL = Automatische Regelung des Lichtbogenstroms;

ARStrS = Automatische Regelung des Speisestroms;

It is obvious that both types of initial abbreviations (alphabetic and phonetic acronyms) are predominant in term samples in electrical power engineering. An initial alphabetic abbreviation is the easiest and most common way in acronyms' formation. In this case, it is formed only by means of first letters of terminological combination or a term. Words formed in such way are often aggravated in pronunciation, and thus, are pronounced letter by letter, not being perceived as a single word. For example:



EKG = Elektrokardiogramm_n – electrocardiogram – ECG – электрокардиограмма – электрокардиограмма;

EM = Elektromagnet – electromagnet – электромагнит – электромагнит;

EW = Elektrizitätswerk – electric generating station – электростанция – электростанциясы;

BM = Bohrsches Magneton_m – Bohr magneton – магнетон Бора – Бормагнетоны;

Dm = Durchmesser_m – diameter – диаметр – диаметр;

D = Diode_n – diode – диод – диод;

DK = Dielektrizitätskonstante_f – dielectric capacitance – диэлектрическая проницаемость – диэлектрик өтімділігі;

GB = Gitterbatterie_f – grid-bias battery – сеточная батарея – торлыбатарея;

GBS = Giterbasisschaltung_f – the scheme with the general grid – схема с общей сеткой – жалпы торыбар схема;

HFL = Hochfrequenzlitze_f – litz wire – литцендрат – литцендрат;

ABP = automatic inclusion of a reserve – автоматическое включение резерва – резервтің автоматтық қосылуы;

TW = terawatt – тераватт – тераватт;

MHD = magneto-hydro-dynamic generator – магнито-гидро-динамический генератор – магнитті гидродинамикалық генератор;

AFC = automatic frequency control – автоматическое регулирование частоты – жиілікті автоматтыр еттеу;

SQUID = superconducting quantum interference device – сверхпроводящий квантовый интерференционный датчик магнитного потока – өткізгіштігітөм жоғары кванттық интерферентті магнитағынының датчигі;

PRJE = pulsing ramjet engine – пульсирующий воздушно-реактивный двигатель – жүріп тұрған әуе-реактивтік озғалтқыш.

However, there are exceptions: initial alphabetic abbreviation can provide pronounceable words.

For example:

TAN = Technisch Arbeitsnorm_f – standard specification – технический норматив – техникалық норматив;

TES = Turbo-Elektroschiff_n – turboelectric ship – турбоэлектроход – турбоэлектроход;

KEV = Kiloelektronenvolt – electron kilovolt (keV) – килоэлектронвольт – килоэлектронвольт;

ISAIV = integriertes System automatisierter Informationsverarbeitung – integrated system of the automated information processing – интегральная система автоматизированной обработки информации – апараты автоматтандырылған түрінде өңдеу үшін интегралдық жүйе;

PFM = pulse- frequency modulation – частотно-импульсная модуляция – жиіліктік-импульстік модуляция;

SAP = sintered aluminium powder – спеченный алюминиевый порошок – пісірілген алюминий ұнтағы;

ATA = absolute technical atmosphere – абсолютная техническая атмосфера – абсолют ті техникалық атмосфера;

PPM = pulse-position modulation – фазово-импульсная модуляция;

PAM = pulse-amplitude modulation – амплитудно-импульсная модуляция – фазалы-импульстік модуляция.

The special cases of abbreviations are of particular interest. The language material analysis made it possible to distinguish the following types of special cases of abbreviations:

—
inversion abbreviation (KU = Umschaltkontakt m – bridging contact; AT = technical atmosphere; IG = Impulse Generator);

—
articles, prepositions, link-verbs as abbreviations' elements (i. W. v. = im Werte von – in the amount of).

The comparative abbreviation analysis of term systems in electrical engineering of German and Russian, Kazakh and English languages indicates that the terms that are abbreviations in German are not abbreviations in other mentioned languages. Let us compare:

BD = Band – energy state band – зона энергетических уровней – энергетикалық деңгейлер діңаймағы;

AZV = Automatische Zielverfolgung – automatic tracking – автоматическое сопровождение цепи – тізбектердің автоматты сүйемелдеу;

DDS = Daten-Dialog-System – translator – транслятор – таратушы;

FuMO = Funkmessgerät – radar navigation station – радиолокационная навигационная станция – радиолокациялық навигациялық станция;

LEI = Licht elektrischer Impulsgeber – photo-electric pulse transducer – фотоэлектрический импульсный датчик – фотоэлектрлі импульстік датчигі;

A comparison of term samples of German, Russian, English and Kazakh languages in electrical engineering has shown that abbreviation, as a way of morphological term formation, is more common in German than Russian terms. The Russian term system in electrical engineering, according to the results of the study, has the major number of initial abbreviations.

Discussion and Conclusion

The term “decoding” abbreviations is of great use among linguists due to a large number of abbreviations and their constant increase. There are two basic methods for “decoding”:

1. *Context Analysis*. This method helps to decrypt abbreviations based on the topic of the text;
2. *Abbreviations dictionary usage*. Despite the fact that this method is quite useful, the problem is that the abbreviations are one of the most dynamic elements of lexicon, and therefore, their meanings change regularly.

There are four ways to translate such abbreviations in other language:

1. Translation of Russian abbreviation. The common (general) terms are translated in a such way – terms that will be understood by the audience certainly without decoding, such as PC (personal computer).
2. Descriptive translation of abbreviation by its full form. This method is applicable if Russian language does not correspond to the concept, which is an abbreviation, if the concept inherent in another country. For example, PhD (Doctor of Philosophy), which is not translated as DP, but only as a "doctor of philosophy".
3. International abbreviations are not translated: HTML, CDROM, DVD.
4. The names of political organizations and other companies are translated. For example, NATO (North Atlantic Treaty Organization) – HATO.



Thus, abbreviations' decoding and translation depend on the complexity of abbreviations and semantic category of the text that contains has such abbreviations.

Thus, in the course of our research, we revealed structural features of terms following their formal organization:

— the more complicated are structural terms of a term system, the more difficult is the process of decoding, the more difficult the process of translation (Tatarinov, 1998). The analysis of existing forms of terms allows to set the most productive methods and models of formation that will make it possible to predict further term systems;

— any terminology (in particular, electrical engineering terminology) is a part of lexical-semantic system of language, it contains all structural types of words and all the semantic processes inherent in common lexis;

— terms can be divided into simple and complex, phrasal combinations, terminological combinations. Terminology combinations, in turn, are divided into connected and free. Simple term refers to a single element formed by affixation or by rethinking common-literary words or individual term formation, or by borrowing them from other terminological space;

— complex term is a two-element term formed by addition or rethinking common-literary words borrowing them from other terminological space, individual term formation by elements of classical languages;

— terminology combination refers to a combination of multi-element separable semantically coherent combination formed by connecting two, three or more elements;

— studied terminology has wide range of syncopation and clipping as a natural reaction of native speakers on formation of a multi-terminological units as a result of acceleration of communication;

— all initial abbreviations in German and in Russian are attribute terminology combinations with the main nuclear term element – the noun.

MTC (multi terminological combinations) – 28 terms, or 1.3% of the total sample. MTC (the number of elements is 3-4) led to abbreviation as a new MIS = mittler integrierter Schaltkreis *m* –mid-scale integrated circuit – среднemasштабная интегральная схема–орташа денгейлі интегралды схема; way of term formation, for example:

MFS = Mehrfrequenz *f*- Code *m*- Signalisierung *f* - alarm code on multiple frequencies – кодовая сигнализация на нескольких частотах – бір неше жиілікте кодыбардабыл;

MAD-Gerät (magnetic anomaly detection-Gerät) – device operating on the principle of detecting the magnetic anomaly – прибор, работающий по принципу детектирования магнитной аномалии – анықтау магниттік аномалиясықағидаты бойынша жұмыс істейті наспап;

IMVAU = (integrierte modulare Bausoftware *†*) – integrated modular means of mathware – интегральные модульные средства математического обеспечения – математикалық қамтамасыз дандыру үшін арналған интегралды модульді құралдар;

AM – amplidyne generator (amplidyne) – электромагнитный усилитель (амплидин);

HF amplifier (high-frequency amplifier) – высокочастотный усилитель;

ASR (Automatic Circuit Recloser) – автоматическое повторное включение;

MHD generator (magneto-hydrodynamic generator) – МГД–генератор (магнито-гидродинамический генератор);

SCFT superconducting flow transformer – сверхпроводящий трансформатор потока, etc.

The abbreviations in German sample are in amount of 295 units, that is 13% of the total sample, in Russian – 94 units, 4%. Schematically, this types of German and Russian terms in electrical engineering can be represented as follows (Figure 2,3,4,5):

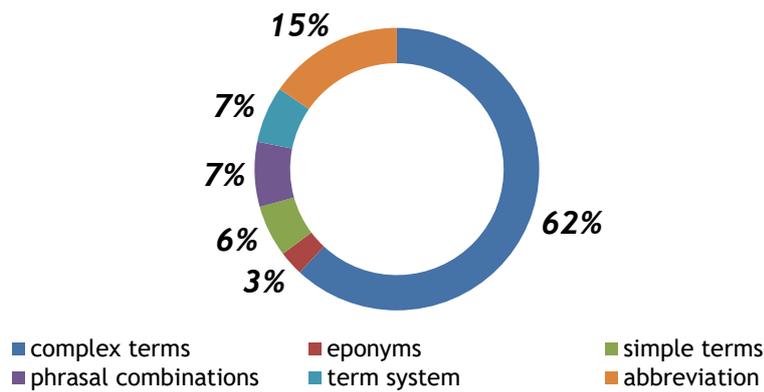


Figure 2. German terms in electrical engineering

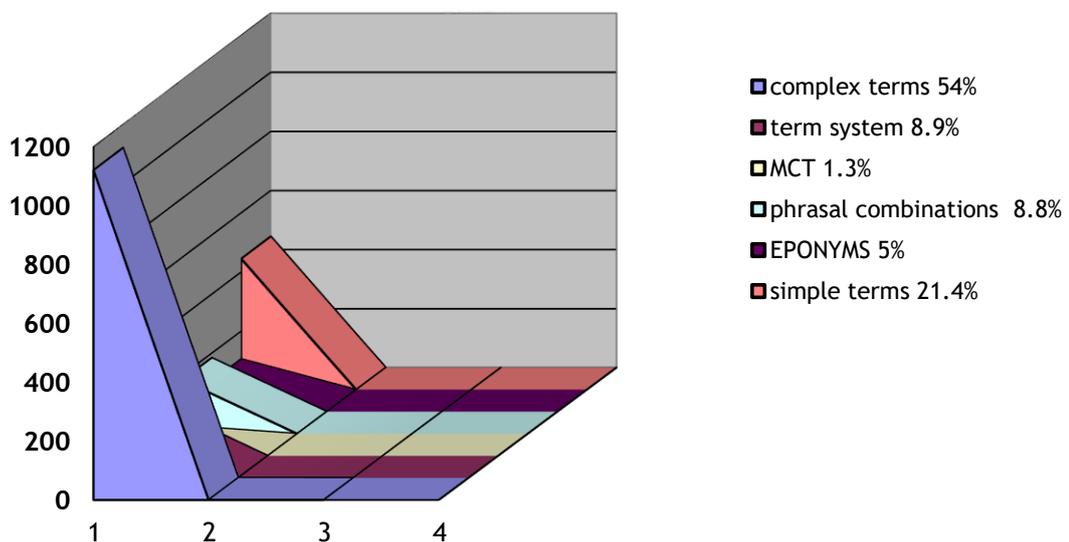


Figure 3. Russian terms in electrical engineering

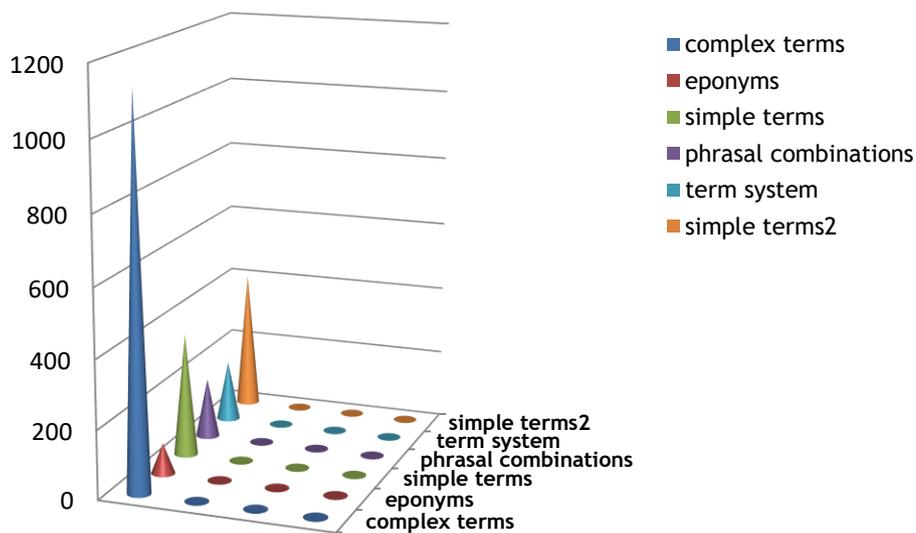


Figure 4. Kazakh terms in electrical engineering

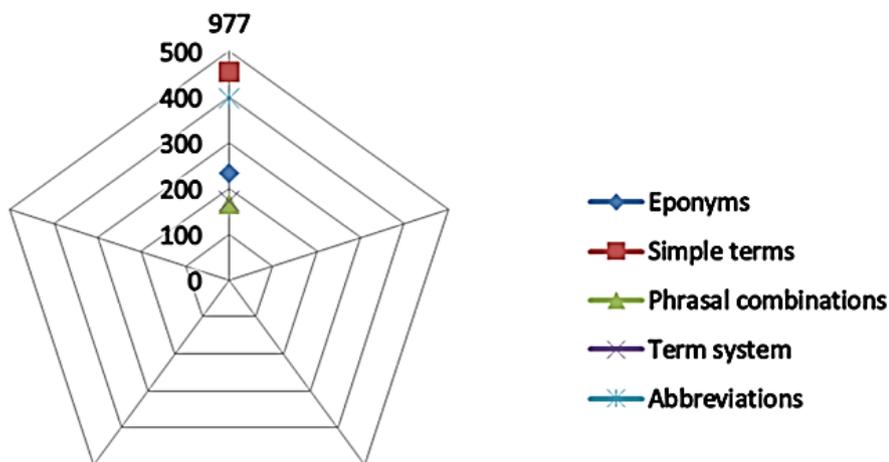


Figure 5. English terms in electrical engineering

Implications and Recommendations

Extra-linguistic analysis of the sample showed that the main factor that intensified the process of abbreviation (clipping) in studied languages is the increase of information, the rapid development of mass media. Most of the examples represent an initial abbreviation where by clipping in terms of first letters of terms systems' elements or a complex term, as well as a simple term. For example, E-Eingang – input device – входное устройство – кіріс құрылғысы; E-Entzerrer_m – correcting device – компенсатор искажений – бұрмалаулар өтемдеуіші. According to comparative analysis, initial abbreviation is more common in the term systems in electrical engineering of Russian language than of German language. The tendency to abbreviation in scientific-technical terminology should be

considered as a natural consequence of a significant increase in the number of complex terms and MCT (multi terminological combinations), causing difficulties in the process of translation, as well as in communication.

Every aspect of translation must consider abbreviated terms correctly in terms of interpretation and perception by taking into account all extra-linguistic factors that contributed to abbreviations. In so-called "harmonic co-occurrence" abbreviations' functional ability, their equivalent will be presented in a more attractive and advantageous context as in oral and written translation.

Consequently, the more difficult is the science, the more difficult are the linguistic means of objects, phenomena and concepts. The extra-linguistic factors underlie abbreviation.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Gulshat Z. Beisembayeva holds a Master of Foreign Philology and now is a Senior teacher at L.N. Gumilyov Eurasian National University, Astana, Kazakhstan.

Manshuk Z. Yeskindirova holds a Master of Education and now works as Senior teacher at L.N.Gumilyov Eurasian National University, Astana, Kazakhstan.

Samal A. Tulebayeva holds Doctor of Philological sciences and now is a Professor at L.N.Gumilyov Eurasian National University, Astana, Kazakhstan.

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